

## **Environmental and Thermal Barrier Coating for Ceramic Components**

### **ABSTRACT OF THE INVENTION**

A component comprises a silicon-based substrate; and a protective coating for the substrate. The protective coating includes tantalum oxide ( $\text{Ta}_2\text{O}_5$ ) and an additive for suppressing transformation from beta  $\text{Ta}_2\text{O}_5$  to alpha  $\text{Ta}_2\text{O}_5$ .